MARINE REVIEW.

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Funeral of Capt. Thomas G. Crosby.

Few marine men there were in Chicago who were not present at the funeral of Capt. Thomas G. Crosby on Wednesday of last week. The services were held at the chapel in Graceland cemetery and were conducted by the Rev. S. C. Edsall. The pall-bearers were W. M. Egan, John Prindiville, John G. Keith, Calvin Carr, James B. Kellogg, C. W. Elphicke, Hugh MacMillan and T. T. Morford, the eight oldest members of the Chicago Board of Marine Underwriters, all of whom had known Capt. Crosby for more than twenty years and some of them had been acquainted with him from boyhood. To all of them it seemed as if a member of their close business family had gone.

Capt. Crosby's relations to lake marine business and the nature of the illness that caused his retirement were referred to in the last issue of the REVIEW. He had suffered for two years night and day the most intense pain, and had he not been gifted with an admirable physique and an equally stalwart character, he would have succumbed long before to the terrible affliction. He was buoyed up to the last by the unremitting care of his devoted wife. His death was peaceful and painless. As a friend who stood at the grave remarked, using the immortal words of Shakespeare: "Take him for all in all he was a man. We shall not soon look on his like again."

LATE CAPT. THOMAS G. CROSBY.

Lake Freight Matters.

Although there is no marked reduction in production or stocks of pig iron on hand and nothing in the market for iron ore to warrant shipments equal even to last year, a renewal of the grain movement has again helped lake freights and the general market is higher and stronger than it has been for three weeks past. The feeling, too, is that the market for the present month, at least, will hold its strength, for these reasons: Receipts of grain at Chicago are such that, notwithstanding heavy shipments, stocks at that port as well as Duluth do not decrease materially, and while the grain movement has held out ore shippers have been doing little more than loading contract vessels. Probably not more than fifteen "wild" boats for both Lake Superior and Lake Michigan have been secured by ore shippers within the past five days. It would seem that unless the grain movement does relax somewhat, ore shippers will be forced to advance rates, and in event of a falling off in the grain movement it will be necessary to make up to some extent for the present restriction in ore shipments. The situation is accordingly more favorable to the vessel owner. With Duluth offering 2¾ cents and Chicago 2 cents on wheat to Buffalo during the past few days, the Escanaba ore rate advanded to 70 cents, but that figure attracted only a very small amount of tonnage. Marquette and Ashland rates have not advanced above 90 cents and $1 respectively, but the supply of tonnage has been very much short of the demand.

Only in soft coal shipments to the head of Lake Superior is there any weakness in freights on up-bound cargoes. Lake Michigan rates on hard coal out of Buffalo are now based on 60 cents to both Milwaukee and Chicago. The same rate applies to soft coal from Ohio ports to Chicago, while the soft coal rate to Milwaukee is 55 cents, an advance of 5 cents secured within the week. The rate to Duluth and Superior on soft coal has been reduced to 40 cents. It can certainly go no lower as there is an actual loss in taking coal at such a freight.

World's Fair Boats.

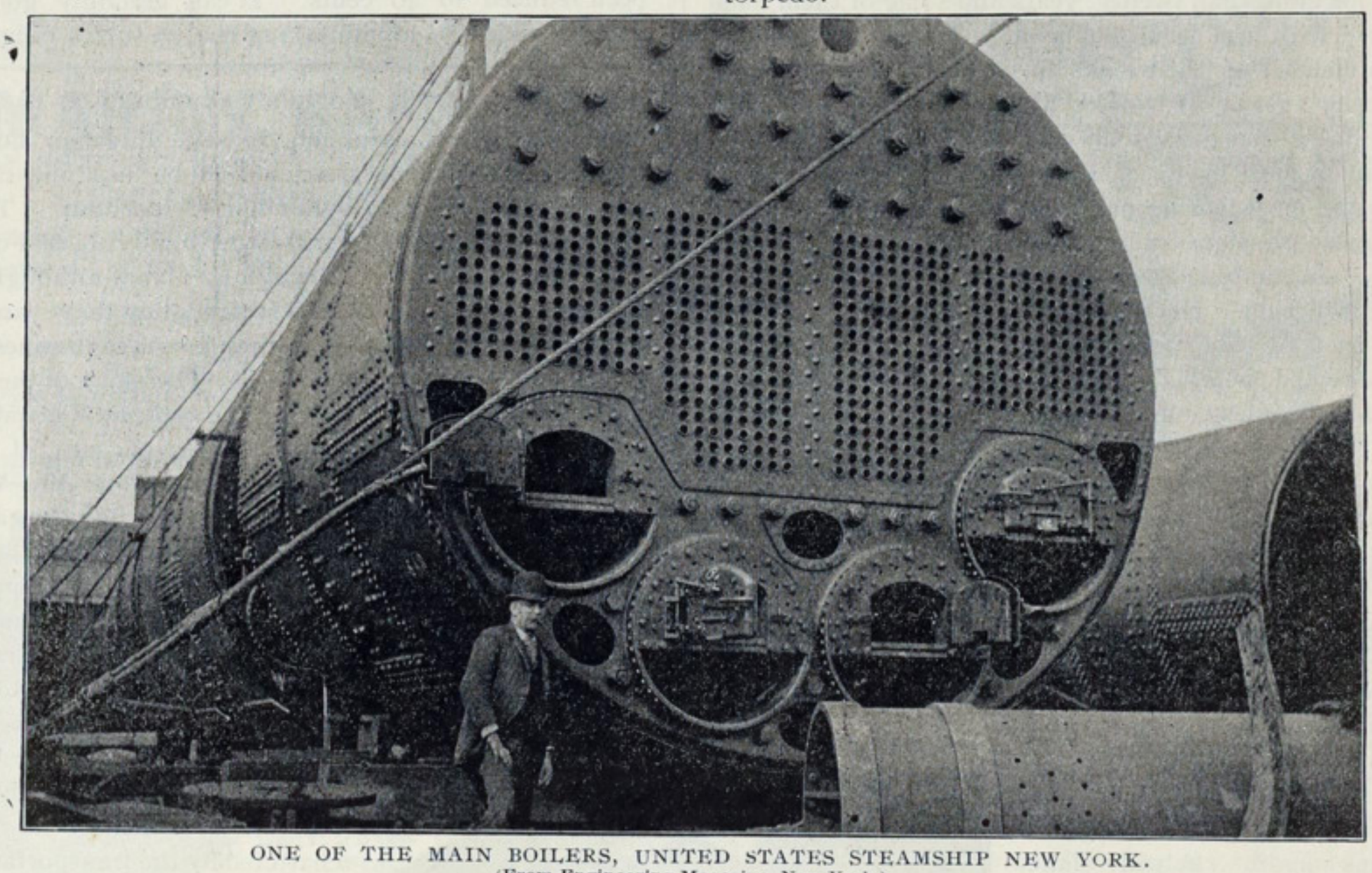
We hope to present shortly some drawings showing revised plans for the whaleback steamer to be used in the passenger service at the World's Columbian Exposition. The American Steel Barge Company will receive a great deal of advertising through this boat, although it will not as a corporation have anything to do with the passenger business by lake at the fair. The name of the corporation having the contract for water transportation between the city of Chicago and the fair grounds is the World's Fair Steamship Company, organized under the laws of Illinois. The Columbian Whaleback Steamship Company, another separate and distinct organization, will undertake, through contract with the American Steel Barge Company, the building of the whaleback boat, which will be chartered to the World's Fair Steamship Company. Other boats to be remodeled for the service will also be chartered by the transportation company but it is probable that the single whaleback steamer will be the only new vessel, on account of delay in securing the contract from the managers of the fair. Among those interested in the company that will furnish the capital for the building of the whaleback steamer are Colgate Hoyt, John D. Rockefeller, Charles L. Colby, Joseph Colby, Samuel Mather, James H. Hoyt, William Chisholm, Judge Williamson, C. W. Bingham, Capt. Thomas Wilson, C. P. Williams and John J. Shipherd. Messrs. Bradley, Harvey, Henry, Stone, Glessner, James and Macdonald are among Chicago parties connected with the enterprise. The company undertaking the building of the boat will have a half interest in the transportation business.

In Philadelphia last week the Erie and Western Transportation Company at its annual meeting decided to borrow $1,500,000 to be secured by terminal properties. Part of this will probably be used to pay for three steamers this company has building in lake ship yards, and it may be that further additions to the fleet are contemplated.

The Modern Marine Boiler.

A. B. WILLITS U. S. N., IN ENGINEERING MAGAZINE.

The marine engines, often things of beauty and always interesting in their steady, graceful and potent functions, receive all the praise when the ship is making or breaking a record. While it is not at all uncommon to find the ordinary commercial traveller versed in the technicalities of this portion of the machinery, and able to discourse glibly on the relative "horse-power" of the leading transatlantic liners, it is seldom that he has much knowledge of the boilers, those vast factories and reservoirs of that power of which he speaks, and which, in their hot and grimy compartments forward, giving but few signs of the intense strain they are under during every moment of the run, perform a duty not in the remotest degree indicated by a share of the glory of a successful trip. It is probable, nevertheless, that in the mechanical world to-day, more thought is being bestowed on the boilers than upon the engines proper; and far from being commonplace accessories, they are constructions of the most scientific character, combining in their proportions the results of the greatest range of experiment and deepest study. Each element is so carefully considered, both by itself and in its relation to the other parts, that the final outcome is an apparatus of elegance to the professional eye, and one in which strength, durability, accessibility and efficient capacity are adjusted to a nicety which satisfies the conditions imposed with regard to the production of a given power within a limited space and with a minimum weight of metal.



ONE OF THE MAIN BOILERS, UNITED STATES STEAMSHIP NEW YORK.
(From Engineering Magazine, New York.)

The boiler depicted in an accompanying engraving represents one of the main boilers of the United States man-of-war New York, now in the course of completion in Philadelphia, and is of greater dimensions than any previously built in this country. It does not differ in size, in any marked degree, from the largest built abroad for the ocean greyhounds, although the latter usually possess more heating surface in proportion to grate, to their economical advantage at full power The structure is 15 feet 9 inches in diameter, and 18 feet long, and is double-ended, having an exactly similar arrangement of furnaces and tubes in each end, only one of which is shown in the view. The tubes conduct the hot gases and smoke of combustion from the backs of the furnaces to the fronts of the boiler, whence they are led to the smoke-pipe by light castings, attached after being placed on board ship, this type being styled the return fire tubular or, more generally, the Scotch boiler. The material is open-hearth steel, subject to the closest inspection and severest tests before acceptance. The nine great sheets composing the cylinder are more than one-and-a-quarter inches thick ($1\frac{21}{64}$) and weigh between five and six thousand pounds each. The flat-heads are thinner, but so closely stayed by heavy steel braces running from end to end, as to compensate for that. Indeed, if wholly unstayed they would have to be of simply monstrous proportions to sustain the pressure put upon them, something like ten inches in this case, which would be both impractical and absurd. Spherical ends would of course obviate bracing and ultra thickness, but the practical advantages of flat ends are retained by a scientific system of bracing. This boiler weighs about seventy tons and contains eight furnaces, and 1,148 tubes, aggregating nearly a mile and a half in length. These form the major part of the 5,200 square feet of heating surface, as they are always surrounded by water to be evaporated. The quantity of water necessary to fill the boiler to a proper steaming height is about thirty tons, yet under forced combustion, such as is always used for full power, this is converted into steam at the rate of ⅓ of a ton a minute, demanding a continuous supply from the pumps, at that rate, to maintain a safe level. The furnaces contain 165 square feet of grate, upon which is burned nearly three tons of coal per hour (about forty pounds per square foot per hour), with an air pressure of less than one-tenth of a pound per square inch above the atmosphere. The steam pressure carried is 160 pounds per square inch above the atmosphere, quite the usual pressure for triple-expansion engines, but when it is realized that this gives a total disruptive strain on the cylindrical shell of more than 6,500,000 pounds, it no longer appears as ordinary but rather terrific; a force, too, which is not evidenced by the placid exterior of this veritable torpedo.

Taking the entire six main boilers of this ship, a brief summary of data is at least impressive and suggestive of the importance of these elements. Their net weight is more than 400 tons, and they contain about three quarters of an acre of heating surface, with eight-and-a half miles of tubes. Their forty-eight furnaces will consume more than 400 tons of coal a day and evaporate 140 tons of water an hour to produce the 16,500 horse-power needed to drive the vessel twenty knots an hour. They will occupy a floor-space in the depths of the ship, 100 feet long by thirty-six feet wide (double that allotted to the main engines) and will require a force of a hundred men to properly attend to and manipulate them. A contemplation of these few facts makes it obvious to any one that a high degree of skill and efficiency on the part of the attendants is important and necessary, and that the element of carelessness here would be as likely to cause havoc and disaster, as it would in the engine-room or on the bridge. Eternal vigilance is the watchword, responsibility and anxiety being ever present with the performance of this unseen duty. It has been mentioned before that the boilers of the great ocean liners were proportioned with a larger ratio of heating surface to grate area than are those of men-of-war and, it is to this fact that the former show a more economical performance, by obtaining a given power on a lower coal consumption. Badly informed writers have used this to animadvert upon the designers or constructors of war-ship machinery without troubling themselves to find a reason for the difference in results,

yet it requires only ordinary reflection to perceive that the conditions in the two cases are wholly dissimilar.

The engines of mail steamers are driven to their full power, at all times, and the question of coal expenditure becomes of financial importance; hence their boilers are always designed especially for economy, and the necessary space in the ship is unhesitatingly taken. To follow this line in a naval vessel, of much less length for equal power, would incur a very excessive sacrifice of hullroom over that now given.

The adoption of forced draft has made it possible to obtain enormously greater evaporation from a boiler of ordinary design than was possible with natural draft, by reason of burning a much greater quantity of coal on the same grate. To do this economically, however, the heating surface, or surface of absorption of the heat from the gases of combustion, must be greatly increased, which means larger or more numerous boilers. The designers of machinery for war-ships have carefully considered the bearing and contingencies of this feature, and have adopted as efficiently proportioned boilers as the existing conditions justify. The assumption is that the full power of this class of vessel never will be required except for short periods, when the production of it at the lowest rate of economy will not be vital; and a mean is considered advisable, where space is of such paramount importance. The quality of workmanship shown in the details of construction, with its guarantee of durability, is second to none in the world.

The desire of marine engineers is to produce a type of boiler which shall do away with the necessity of such enormously large and heavy shells, and present a lighter substitute which will perform the duties of both envelope and heating surface conjointly. A very great reduction in size and weight is thus possible, and the numerous forms of tubulous boilers are the outcome of this desire which, year by year, is intensified by the gradual necessary increase in the proportions of the cylindrical type. The tubulous boiler consists of numerous tubes of comparatively small diameter, and variously connected, inside of which the water circulates, and around which a light casing of metal, lined with refractory material is built to confine the hot gases to action upon their outer surfaces. Thus the tubes become parts of the shell as well as continuing to be heating surface, and by reason of small diameters, even in the connecting drums, all very thick plates are avoided and the highest desirable steam pressure safely carried. The amount of contained water is also greatly reduced as well as much more effectively disposed for evaporation than obtains in the Scotch boiler, where the water is solid bulk, much of it below all heating surface, and only brought to the boiling-point slowly or by forced circulation. For years this tubulous form has found favor for use in smaller vessels, such as torpedo-boats or launches, but its adoption for larger ships has been delayed for reasons which, temporarily at least, counterbalance the evident advantages of less weight and size, better circulation more efficient evaporation and the rapidity with which steam can be raised. One of these is that their very compactness militates against their accessibility for cleaning and examination, and it is feared that without a posibility of unusual care their decay will be rapid and their life short, when placed in the damper holds of deeper vessels, where their use will be interrupted by long periods of idleness. Besides this, the ready renewal of defective tubes is not perfectly provided for in most designs, and many practical difficulties have attended this work with the smaller sizes, despite a theoretical demonstration of the ease of such operations. Especially is this true after some considerable use, and indicates a probable trouble and incites caution in those who would like to abandon the bulkier but more accessible form.

Experiment of course, is the only way to prove their real adaptability to the service required, and the government has placed on board the United States cruiser Monterey, just built in California, four tubulous boilers. Much interest centers in the coming trial of these boilers, but upon the reports which shall be made by the engineers in charge, after a continuous experience with them under the various conditions of a cruise, will depend any verdict of value. The field is open still for inventive minds, as the perfect type has not yet been evolved. The study is in better shape now by reason of the many devices already constructed and found wanting, as their faults, as well their points of excellence, serve to aid the designer in marking his lines for improvement.

Send 20 cents in stamps for Tabulated Statement showing Lake Superior ore production for 1891, and the past 36 years.

Census on Lake Fisheries.

Special Correspondence to the MARINE REVIEW.

WASHINGTON, D. C., June 16.—The census bureau will in a few days issue a bulletin in reference to the fisheries of the great lakes, presenting statistics by which will be shown the extent of the commercial fisheries in that quarter as they existed in 1889. The returns represent over 3,500 miles of shore line canvassed by the agents of the bureau. It is stated in this bulletin that the fisheries of the great lakes are the most extensive lake fisheries in the world. Their great economic importance to the states adjacent to the lakes is attested by tabular statements,in which are shown the large number of persons engaged, the great amount of capital invested and the enormous quantity and value of the products taken. Nor does the importance of these fisheries stop with the mere capture and handling of fish; other industries of great extent are more or less related to, or entirely dependent upon these fisheries, among which boat and vessel building stands prominent. In 1889, 6,896 persons were engaged in the capture of fish on the great lakes. These employed 107 steamers, valued at $357,650, and 3,876 other vessels and boats worth $325,438, representing a total capital of $683,088 invested in lake craft. The capital invested in shore property directly connected with the fisheries was $804,814, with a large amount invested also in the necessary fishing apparatus, including seines, nets, etc. These items all told, are a total investment in fishing property on the great lakes of $2,832,959.

More than one-half of this total investment is to be credited to Lake Erie, which advances from second position held in 1880 to first rank in this respect, the increase being greater than in any other lake, amounting to 187 per cent. Lake Michigan, which stood first in 1880 has dropped to second place, and shows a smaller increase than any other lake, namely 30.01 per cent. Lakes Huron and St. Clair have advanced 160 per cent., and they are closely followed by Lake Superior with an increase of 150 per cent. Lake Ontario has declined in the amount of investment and exhibits a loss of 11.72 per cent. The aggregate net increase has been $1,486,984, or 110 per cent.

Next to the more extensive employment of improved apparatus, perhaps nothing connected with the means and methods of fishing has contributed so much to the increase in the value of the fisheries as the introduction and general adoption of steam vessels by the principle firms for capturing and collecting. The increase in steam fishing vessels on the lakes has amounted to 118 per cent. since 1880.

Management of the Welland Canal.

Special Correspondence to the MARINE REVIEW.

KINGSTON, Ont., June 16.—The only matter of marine importance which was brought before parliament last week was by the Hon. Mr. McCallum. It was in connection with the superintendency of the Welland canal. He asked for the production of the evidence taken by the commissioner who investigated the management of the canal nearly three years ago. He said it was inexplicable to him why Supt. Ellis should be retained in the public service, considering the evidence that was forthcoming before the commissioners. For some reason or other the government had declined to lay the evidence before parliament, but if they persisted in their intention he would be compelled to read the whole of it to the senate, so that it might go on the public records. Evidently there was a power behind the throne protecting Mr. Ellis. The premier assured Mr. McCallum that the minister of Canada would investigate the whole question thoroughly during the recess.

Mr. H. Calvin, timber shipper, was elected by acclamation to represent Frontenac in parliament. He is a wealthy ship owner and a strong advocate of reciprocity in wrecking.

On Thursday evening the board of trade will meet and discuss the erection of an elevator here. The citizens, it is understood, will offer to subscribe 40 per cent. of the stock if the forwarding companies will do the rest.

Control of Dock Property at the Sault.

Special Correspondence to the MARINE REVIEW.

SAULT STE. MARIE, Mich., June 16.—Few vessel owners realize the fact that they are indirectly paying a toll for locking through the St. Mary's canal lock. This is especially the case with schooners. The Hursley tug line charges schooners $5 each for towing them from the government dock over to the lock, past the Union dock and the coal company's dock. This company owns 525 feet of dock frontage, which is wedged in between the government docks at the east end of the lock. If this property was owned and controlled by the government, schooners would not be compelled to get a tug to tow them to the lock. Control of the dock by the government would also prevent the danger which now exists of vessels striking tonnage which may be moored to the Union dock or coal company's dock. The time has arrived, it would seem, when it is necessary in the interest of the government as well as the vessel owners that this strip of dockage be purchased and controlled by the government. Under such control much better time could be made in the lockages. Vessel owners are at present paying for tugs as large a figure as canal tolls would amount to if the canal was still under control of the state of Michigan, as the canal rates were gradully decreasing when the United States assumed charge of the lock. The owners of the Union dock as well as the coal company are understood to be willing to sell if satisfactory terms can be arranged.

Ontario Ship-Railway.

Mr. E. L. Corthell, civil engineer of Chicago, is one of the promoters of the proposed Georgian bay and Lake Ontario ship-railway, which is attracting a great deal of attention in Toronto and other parts of the dominion. In a letter answering an inquiry recently made by the REVIEW Mr. Corthell says:

"I am quite positive that as soon as the Chignecto ship railway is completed, which I understand is now in good shape to go forward to completion, there will be no difficulty in raising the $15,000,000 required for building the Ontario ship railway and by it discharging into Lake Ontario and to the ten railroad terminals on that lake from Buffalo to Ogdensburg the immense business which now has to be stopped at Niagara falls. I am not referring at all to the local business of Lake Erie, or to the through business which must go either by way of the St. Lawrence to Montreal or by way of New York to the Atlantic seaboard and thence to Europe. I have given over twelve years of study and work on ship railway projects and plans, and I have been for many years convinced of their practicability, not only physically but commercially. I am happy to inform you, too, that the work that I was engaged on so long in connection with Capt. Eads on the American isthmus is likely to be constructed in the near future. We are proposing to open up an inter-oceanic route there, which with its great advantages over either Panama or Nicaragua will soon call for a better method than an ordinary railroad can furnish."

Additional Private Light Expense.

It is more than probable that toward the latter part of this week a small light-ship will be stationed on Eleven-foot shoal at the entrance to Green bay. The plan is to have the cost of equipping and maintaining the light-ship collected from boats in the Escanaba ore trade. The vessel will have a whistle for thick weather and also a bell, if the latter can be secured without too much expense. The importance of a light at this point is fully understood by every master trading to Escanaba. A bill now before Congress, the sundry light-house measure, provides that $60,000 already appropriated for a light-house at Eleven-Foot shoal be applied to the construction of one or more light-ships for lake service, but the urgent need of a light of some kind at this point has forced the vessel owners to assume additional private expense. The movement has been started by captains trading to Escanaba and there is little doubt of money being secured for the light.

A Big Fleet in a Few Years.

J. C. Gilchrist of Cleveland is now managing owner of eighteen vessels, having an aggregate net registered tonnage of a little less than 20,000. The Bradley fleet, controlled by M. A. Bradley of Cleveland, the largest individual owner on the lakes, numbers twenty-four vessels aggregating 22,539 net registered tons. Mr. Gilchrist, with whom R. E. Schuck and W. H. Gilcher of Sandusky are largely interested, was not a managing owner of any vessel property until 1880. The price paid for the steamers A. P. Wright and John B. Lyon, purchased by Mr. Gilchrist from Capt. Frank Perew of Buffalo, last week was $175,000.

Grain at Chicago and Duluth.

Stocks of grain at Chicago and Duluth on Monday, June 13, were as follows:

	Chicago.		Duluth.
	Wheat, bu.	Corn, bu.	All wheat, bu.
In store	6,505,557	1,427,311	4,270,399
Decrease last week	.....	187,422	13,538
Increase last week	63,388	.....	.....
Excess over same time last year	4,370,982	330,689	1,752,828

In addition to the above there is 1,053,336 bushels of oats, 176,703 bushels of rye and 17,539 bushels of barley in store in Chicago.

Against the Transfer Elevators.

Buffalo vessel owners, members of the Lake Carriers' Association, have taken a stand against the floating elevator Cyclone, declaring by resolutions that it is an obstruction to navigation and demanding its removal. As shown by the resolutions printed below, they have also begun a movement against all transfer elevators, calling upon members of the association in different parts of the lakes to refuse to have their vessels unloaded at elevators other than those having storage facilities. Clevaland managers of the association held a meeting on Monday but it was not given out that any action had been taken in this regard. The resolutions adopted as the sense of the feeling among Buffalo owners with regard to these elevators are as follows:

WHEREAS, Vessels carrying grain cargoes are frequently long delayed in unloading by being required to discharge their grain cargoes at transfer towers, which can only unload the vessel as fast as canal boats can be obtained to take the cargoes away from the tower; and

WHEREAS, Many owners of vessels on the lakes have during the present season of navigation suffered heavy loss from the delays caused their vessels in this way; now, therefore, be it

RESOLVED, That the Lake Carriers' Association is in favor of inserting in all bills of lading for the transportation of grain on the lakes, a provision expressly stating that the vessel shall in no event be required to discharge its grain cargo except at an elevator having storage capacity.

RESOLVED, also, That the secretary of the association send to each member of the association for signature an agreement not to carry grain unless the bill of lading contains the provision aforesaid, such agreements not to be binding unless signed by more than.....per cent. of the tonnage of the association.

RESOLVED, also, That the board of managers of the association earnestly urges all members of the association to sign such agreement.

It was announced at the meeting of the finance committe in Cleveland Monday that the membership of the association at the close of last week represented 565,000 net tons of floating property. The membership books of the association will close for the year on Saturday of this week. Mr. Harvey D. Goulder was authorized to call on Gen. Poe at Detroit immediately and consult him regarding matters pertaining to the draft of water at the St. Mary's Falls canal. Owners whose steamers have been compelled to pay tug hire in navigating the canal within the bay between Duluth and Superior complain that this expense could be avoided if the channel was properly buoyed, and the light-house board will be appealed to in the matter.

Stage of Water in the Detroit River.

Stanley B. Smith & Co., operating coal docks on the Detroit river, will render deep laden vessels a valuable service this season, by keeping and displaying at their coal dock a record of the water level. The aim will be to assist masters who are uncertain as to whether it will be safe in time of low water to run down over the Lime-Kilns crossing. Drawings in next week's issue of the REVIEW will explain the method to be followed. A dispatch from Detroit Wednesday said that the water gauge at the company's dock showed 1.2 foot above zero, equal to 21 feet at the Lime-Kilns.

Wants a Re-survey.

EDITOR MARINE REVIEW: It seems about time that a re-survey should be made of the north shore from the Straits of Mackinac to Escanaba, a locality in which a large amount of shipping in lumber of all kinds, especially cedar, has been built up of late years. There are many shoals and rocks along this coast that are not noted on the charts. How they were overlooked is not explained but the low stage of water prevailing of late has developed their existence. A re-survey would show all of these places and would assist navigation. Many masters and owners will, I feel, bear me out in this suggestion, and they should begin a movement toward the improvement. A few light-houses at Pointe Epoufette and Naubinway, for instance, would also make this shore a safe route or would at least help navigation.

E. A. BOUCHARD,
Master, tug Duncan City.

Cheboygan, Mich., June 9.

Official Numbers and Tonnage.

The bureau of navigation, E. C. O'Brien, commissioner, assigned official numbers to the following lake vessels during the week ending June 11: Steam—Bonito, Port Huron, 73.58 tons gross, 49.24 net, No. 3,554: James L. Allison, Port Huron, 54.08 tons gross, 29.83 net, No. 77,034: Peter D. Hershey, Buffalo, 14.96 tons gross, 7.48 net, No. 150,588. Sail—Eddie, Detroit, 30.34 tons gross, 28.83 net, No. 136,294; Irene, Chicago, 21.22 tons gross, 20.16 net, No. 100,532; Druid, Chicago, 16.33 tons gross, 15.51 net, No. 157,346.

Iron Mining.

VALUE OF LEADING STOCKS.

Quoted by Chas. H. Potter & Co., No. 104 Superior St. Cleveland, O.

Stocks.	Par Value.	Bid.	Asked.
Cleveland-Cliffs Iron Company	$100 00	$.....	$ 75 00
Champion Iron Company	25 00	.....	60 00
Chandler Iron Company	25 00	42 00	45 00
Jackson Iron Company	25 00	.....	100 00
Lake Superior Iron Company	25 00	44 00	47 00
Minnesota Iron Company	100 00	.....	75 00
Pittsburgh & Lake Angeline Iron Co	25 00	.....	147 50
Republic Iron Company	25 00	.....	18 50
Ashland	25 00	.....	.....
Section Thirty-three	25 00	.....	7 50
Brotherton	25 00	2 00	2 50
Iron Belt	25 00	2 10	.....

Within the past few weeks several representatives of companies engaged in the ore sales business in Cleveland have visited the Mesaba range and it seems to be the general opinion that some ore will be shipped this season from Kimberly's Biwabic properties if the railway work can be pushed to completion. It is admitted that the Kimberly workings show some ore very high in iron and low in phosphorus. Little reliance can be placed in estimates regarding the amount of Bessemer at any of the promising properties, however, as the new range may prove that there are some lessons to be gone over again in the Lake Superior mining business. James Sheridan is at the head of a syndicate that has leased eighty acres from the Ohio company. He agrees to mine 150,000 tons the first year at a royalty of 65 cents. The royalty paid by the Kimberly party for the Biwabic is admitted to be above 50 cents. N. D. Moore of Moore-Benjamin-Gogebic fame has applied to the Cincinnati company for a lease of three forties, agreeing to mine a minimum of 300,000 tons yearly, to pay a sliding scale royalty based on 56 cents a ton with ore selling at $3.50 a ton, and increasing 5 cents with every advance of 25 cents in the selling price of ore.

There has been pending in one of the state courts of Wisconsin for some time past an action known as the Warner-Benjamin mining suit, which grew out of a sale of mining stock during the Gogebic craze. Trial was had before a jury and Judge Johnson in Milwaukee recently had a verdict granted to the plaintiff. If the ruling of the court in the case is sustained by the supreme court of the state, everyone who has offered for sale corporate stocks not fully paid up, or watered in any considerable degree, will be liable to refund the money to the purchaser.

Shipments of iron ore from Two Harbors up to Wednesday, June 8, aggregated 185,620 gross tons, of which 105,532 tons was from the Chandler and 80,088 tons from the Minnesota mine. On the same date shipments from Ashland aggregated 367,827 tons, divided as follows: Ashland 41,242 tons, Aurora 65,569, Colby No. 2 12,662, Tilden 29,377, Iron Belt 8,127, Montreal, North vein 4,041, Palms 10,620, Brotherton 15,619, Carey 7,803, East Norrie 35,307, Newport 13,234, Norrie 86,627, Pabst 18,556, Sunday Lake 16,108, Windsor 2,928.

A suspension of operations now going into effect in some of the workings of the Penn Iron Company will reduce the output of the company this season 25,000 to 30,000 tons.

A meeting of the stockholders of the Appleton Mining Company is called for the 21st inst. at Norway, Mich.

Death of John L. Schrader.

John L. Schrader, marine editor of the Buffalo Courier, who met with a violent death at that port on Tuesday evening by falling into the hold of the steamer Scranton, was well known and esteemed by owners and masters of vessels in all parts of the lakes as well as in Buffalo. Few reporters on the daily papers around the lakes are given an opportunity, through sufficient time of service in marine work, to become well versed in matters pertaining to the business. Not so with John Schrader. He was forty-nine years of age and had been connected with the Courier for thirteen years, acting in the capacity of marine editor for about ten years. Tall in stature, always active and good natured and of an amiable and upright disposition, he made friends wherever he went. He leaves a widow and two children in comfortable circumstances. Mr. Schrader was the Buffalo correspondent of the REVIEW.

In General.

Leon F. Almy was in Detroit recently superintending the placing of an Almy water tube boiler in the steam yacht Uarda.

H. F. Sprague, marine artist, has recently completed a very fine marine scene of Duluth from the lake at night, the feature of which is Capt. B. B. Inman's tug Record picking up the schooner Annie M. Ash.

Receipts of coal at Milwaukee for the month of May were 141,472 tons—87,873 tons of anthracite and 53,599 tons of bituminous. Total receipts for the season to June 1, 198,356 tons, of which 102,718 tons are anthracite and 96,538 tons bituminous.

The steel steamer Mariposa to be launched at the yard of the Globe Iron Works Company, Cleveland, today (Thursday), is a duplicate of the Maritana, 350 feet long, launched at South Chicago a few days ago. The boats have been described in the REVIEW.

R. A. Johnston, accountant for the Michigan Log Towing Company at Bay City, Mich., has accepted a similar position with the St. Joseph and Lake Michigan Transportation Company and Vandalia line steamers, with headquarters at St. Joseph, Mich.

One of the largest cargoes carried on the lakes was taken out of Escanaba by the steamer Maryland of the Inter-Ocean fleet Tuesday. She took 3,069 gross tons of ore, nearly 3,400 net tons to South Chicago. This broke the big cargo record by over 100 tons.

According to the regular monthly report of the American Manufacturer, Pittsburgh, the united weekly capacity of pig iron furnaces in the country was not so great on June 1 by 2,453 gross tons as was the capacity of those in blast on May 1. The decrease in manufacture of coke iron was 2,923 tons per week.

The general adoption of incandescent lighting plants on lake steamers makes it necessary that marine engineers be informed on electric lighting, and the day may not be far off when it will be required in examinations. The simplest and most valuable book on this subject is "Electric Lighting for Marine Engineers. "It is written by Sydney F. Walker, electrical engineer, Severn road, Cardiff, and published by the Tower Publishing Company, 91 Minories, London. If you want a copy send $2 to the REVIEW, as we expect to order a number of copies.

The release of the Colorado from Thunder bay island last week by Parker & Millen's tug Favorite, Capt. Martin Swain, is probably the most successful wrecking job of its kind ever accomplished on the lakes if not in the world. The Colorado went on light, going full speed in a fog. The tug reached the boat Tuesday, and Thursday four "hutchucks" were on each side with jacks placed under each one and on top of timbers placed upright on the bottom of the lake. The jacks were screwed up and the boat pulled forward several times in this manner. At 1 o'clock Friday afternoon the Colorado was afloat.

Notices to Mariners.

Notice is given of the following changes in buoyage in Poverty island passage: The black spar buoy on Seventeen foot shoal has been removed and a black second-class can buoy put in its place. The black and red spar buoy on Poverty island, Fifteen foot shoal has been removed. A red second-class nun buoy has been placed in 19 feet 8 inches of water, 1,420 yards E. ⅛ N. from the black Seventeen foot shoal buoy; Poverty island light house, S. E. by E. ¼ E., distance 2⅜ miles; Gravelly island, S. W. ⅞ S., distance 1⅝ miles. A narrow rocky ledge with 23 feet over it extends for about 500 yards south by east from this buoy. There may be less water in spots over this ledge and caution is necessary in passing with deep laden vessels. The Saunders point buoy, Little Bay de Noquette, has been replaced.

The monthly bulletin of the light-house board, date of June 1, reprints the following notices regarding aids to navigation on the lakes: At South Manitou, Lake Michigan, fog signal repaired and will be sounded as usual during thick or foggy weather; Faiport, Lake Erie, tower on east pier moved 117 feet to northward of former position and light now at a point 28 feet from outer end of east pier; fog signal at Grand Marais, Minn., north shore Lake Superior, disabled and can not be sounded.

MARINE REVIEW.

DEVOTED TO THE LAKE MARINE AND KINDRED INTERESTS.

JOHN M. MULROONEY, ... } PROPRIETORS.
F. M. BARTON, ... }
HOMER J. CARR, . . . Associate Editor and Manager Chicago Office, Western Union Building, 110 LaSalle Street.

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The books of the United States treasury department contain the names of 3,600 vessels, measuring 1,154,870.38 tons in the lake trade. In classification of this fleet the lakes have more steamboats of 1,000 to 2,500 tons than the combined ownership of this class of vessels in all other sections of the country. The number of vessels of 1,000 to 2,500 tons on the lakes on June 30, 1891, was 310 and their aggregate gross tonnage 512,787.58; in all other parts of the country the number of this class of vessels was, on the same date, 213 and their gross tonnage 319,750.84. The classification of the entire lake fleet is as follows:

Class.	Number.	Tonnage.
Steam vessels	1,592	756,751.53
Sailing vessels	1,243	325,131.06
Canal boats	703	72,515.42
Barges	62	20,472.37
Total	3,600	1,154,870.38

Tonnage built on the lakes during the past five years, according to the report of the United States commissioner of navigation, is as follows:

	No. of boats.	Net Tonnage.
1887	152	56,488.32
1888	222	101,102.87
1889	225	107,080.30
1890	218	108,515.00
1891	204	111,856.45
Total	1,021	485,042.94

St. Mary's Falls and Suez canal traffic: Number of boats through St. Mary's Falls canal in 1890, 234 days of navigation, 10,557; tonnage, net registered, 8,454,435. Number of boats through Suez canal during 1890, full year, 3,389; tonnage, net registered, 6,890,014.

Entered at Cleveland Post Office as Second-class Mail Matter.

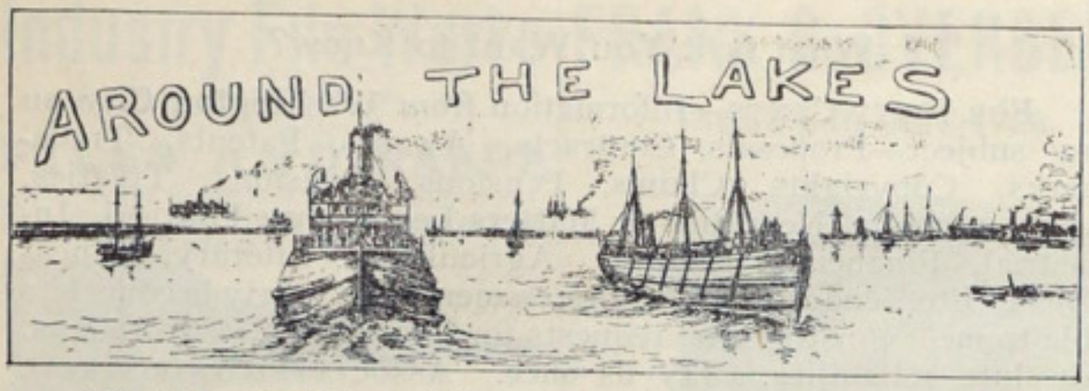
MUNICIPAL authorities in Cleveland have again taken up the question of ownership of lake front property, and it is probable that proceeeings at law will be instigated against two or three of the railway companies claiming title to certain lands over which a dispute has arisen. The question of title to such lands in Cleveland, as well as in other ports where similar disputes have arisen, is a matter that belongs to the courts and does not admit of an opinion before the proper course of testimony has been submitted. It is manifestly unfair, therefore to all interests that in the Cleveland case especially a great deal of rot has been printed about these railway companies taking lake business away from Cleveland while securing control of lake front property. In the case of the Lake Shore Railway Company, for instance, it is charged that with the interests of the company in the coal and iron ore at Ashtabula Harbor, the aim of its managers is to prevent an increase in these lines of trade at Cleveland. Such statements, calculated to have a bearing upon matters like the present question of land title, may do some harm among those unacquainted with the conditions that govern the relations of lake shipping interests toward the railways, but they will have no effect among vessel owners. The shorter haul between Ashtabula and the furnace districts has been and will continue to be a leading factor in giving that port the largest share of the iron ore trade. Distance is against Cleveland in this regard just as it is against Lorain, Huron, Sandusky and Toledo, the ports farther up Lake Erie. The vessels engaged in these lines of trade are owned and controlled in Cleveland, and it is a narrow view of this question to claim that the railway companies bearing such an important part in the advancement of a city should be hampered in other directions on account of the efforts of managers to adjust their business to conditions ruling in certain lines of trade. It might as well be claimed that Detroit and other St. Clair and Detroit river cities with their vessel owning and ship building interests should renounce all measures pertaining to the welfare of lake commerce because the actual carrying trade to and from the northwest passes their doors. There are two sides to this question of the relations borne by the railways toward lake commerce and city authorities will do well to remember this point in cases like that now being considered in Cleveland.

AGAIN it seems evident that the only way in which the Welland canal toll question can be settled is by prompt measures on the part of the United States government to put in force at the St. Mary's Falls canal regulations similar to those governing the shipment of grain, coal and other commodities through the Welland. Secretary of State Blaine and Secretary of the Treasury Foster were engaged in a conference with Messrs. Bowell and Foster, the Canadian ministers, on the subject when Mr. Blaine's resignation was sent to the president so abruptly a few days ago, but they had arrived at no conclusion further than a reply from the Canadian ministers that, while the rebates allowed might be considered discrimination in favor of the Canadian route, it was not discrimination against the citizens of the United States, for the reason that British subjects were treated in precisely the same manner as citizens of the United States. The admission that the Canadian system of tolls favors a Canadian route is in itself enough to warrant retaliatory measures at the Sault, if a satisfactory settlement can not be reached. But there is no danger of Canada allowing the question to extend so far as to involve retaliation at the Sault canal if the proper spirit is shown by our own government.

As a result of having wheel chains on lake steamers rove in different ways the owners of the passenger steamer Pilgrim presented her to the owners of the Kalamazoo, which was sunk by the former in collision. The owners of the Kalamazoo paid $6,000 towards the mortgage on the Pilgrim, but an eminent admiralty lawyer says that this was a contribution, as the Pilgrim was entirely at fault. This is only one of many cases of loss through the different methods of steering lake vessels. Some more of these cases are needed to convince owners, as they present more forcible arguments on uniformity in steering than wordy debates or newspaper agitatation of the question. Some data was collected by the REVIEW a short time ago showing that of the representative fleet of the lakes 286,950 tons steered ship fashion and 179,735 steamboat style. It was expected that the old Lake Carriers' Association would endorse the universal straight chain plan and that this endorsement would be laid before the supervising inspectors of steam vessels at their last annual meeting, but as many of the line boats steer with cross-chains it failed to receive attention. It is to be hoped that the new association will look after this matter in time for the next meeting of the inspectors.

THE New York Engineer quotes from the Postal Guide a letter in which the first assistant postmaster general says there is no law which compels a subscriber to pay for a paper after he has notified the publisher to stop it. This, of course, only occurs where publishers do not require subscription money in advance. A subscription list paid up in advance is the least troublesome to subscriber and publisher, and certainly the most valuable for advertisers. Every branch of trade has its Ishmaelites, and the alleged technical publications that exist upon advertising secured through practices demanding rulings of this kind are the greatest detriment to the journal that is conducted on honest business principles.

Foreign naval powers are constantly showing uneasiness on account of the advancement being made in our merchant marine as well as the navy. The latest decree is to the effect that hereafter American naval architects shall not be admiteed to European dock yards in which war ships are being built.



The John C. Fitzpatrick, new consort of the steamer George T. Hope, took 1,949 tons of coal out of Toledo last week on 14 feet draft.

Capt. Thomas Currie and E. C. Recor of Port Huron have sold the steambarge Huron City to Capt. Messwald of Marine City on private terms.

On the present Lake Superior draft the entire fleet of McDougall barges has a capacity of about 41,000 gross tons, or 45,250 gross tons from Lake Michigan.

The Michigan Vessel Owners' Association of Detroit passed suitable resolutions on the death of Mr. John Hurley. Members of the association atttended the funeral in a body.

The steamer Roby has been dismasted. Her owners have had what they consider all superfluous timber and iron removed and say the change will increase her carrying capacity at least thirty tons. She is to be provided with one light pole spar.

Parker & Millen of Detroit have been awarded the contract for taking the cargo of chestnut coal out of the steamer Progress, sunk in the Detroit river by collision with the Briton. A committee of underwriters is endeavoring to sell the boat as she lies.

Capt. Edward Lusk was knocked off the schooner Tasmania on Lake Huron off Point Au Barques Friday night and drowned. The Tasmania was in tow of the steamer Australasia, and the accident happened in a dense fog. Capt. Lusk resided in Chicago and leaves a widow and one child.

Good lawyers at Chicago who were interviewed regarding the recent raids of strikers took the position that the city is responsible for all damage inflicted on vessels by such raids. These raids are really riots, and the city is responsible for the full value of all property destroyed by rioters.

During the past fifteen days the Kendall Marine Reporting Company has delivered 453 letters and messages to vessels passing Port Huron. The company contemplates making application to the post office department to establish an office at the foot of Butler street during the summer months. This would be a great accommodation to vesselmen.

Testimony has been given in the United States circuit court at Portland, Ore., in the case of Frank Upton, of Kobe, Japan, against the whaleback steamer Charles W. Wetmore, the former claiming $250,000 salvage for towing the whaleback into the Columbia river. Most of the testimony taken was as to the probability of the whaleback drifting ashore and being lost without the aid of the Zambeesi.

The three big boats that will leave Davidson's West Bay City yard shortly are said to be the largest wooden steamers on the lakes. They are 326 feet long, 43 feet beam and 26 feet deep, having steel keelsons and chords. In addition to the steamers two of the largest tow barges on the lakes will be floated from this yard, which covers 40 acres and where 600 men have been employed during the winter in addition to a force of 225 at work in the woods getting out timber.

The success attained by the lighting plants placed on the steamers City of Detroit and City of Cleveland has induced Mr. David Carter, general manager of the Detroit and Cleveland Steam Navigation Company, to install the Fisher Electric Company's automatic dynamos on the City of Detroit, No. 1. The boat, therefore, comes out this season with new dynamos and the system of wiring entirely overhauled. All the Detroit and Cleveland Steam Navigation Company's steamers are now equipped with lighting outfits from this company.

In the fall of 1886 began a period of big profits in lake shipping business that lasted for three seasons following, notwithstanding the enormous increase in tonnage that has attracted so much attention to the lakes. The schooner Lucerne, owned by Mr. Corrigan of Cleveland was one of the vessels that was run to Lake Superior very late that fall for ore. She was driven ashore with a loss of eight lives near Bayfield, and in the same storm the accidents were more numerous than had ever before been heard of on the lakes. An effort is now being made to raise the vessel.

A dredge 95 feet long with a schooner bow will be constructed by the Milwaukee Dry Dock Company for the Bower Dredging Campany of Chicago. The dredge is to be of sand-sucker pattern, with a powerful revolving knife capable of grinding up heavy clay and shale or any other rocky substances, attached to the end of the suction pipe. It is said that recently on the Pacific coast rocks 6 feet in diameter were literally ground into atoms and removed by one of these machines. The dredge can be operated in water 40 feet deep if necessary. All of the machinery for the craft is to be obtained from the Pacific coast. For holding the dredge in position or shifting her from point to point spuds operated on axles at the sides by steam cylinders will be utilized instead of straight up and down heavy timber anchors. Its cost complete will be about $80,000.

End-On and Broadside Launches.

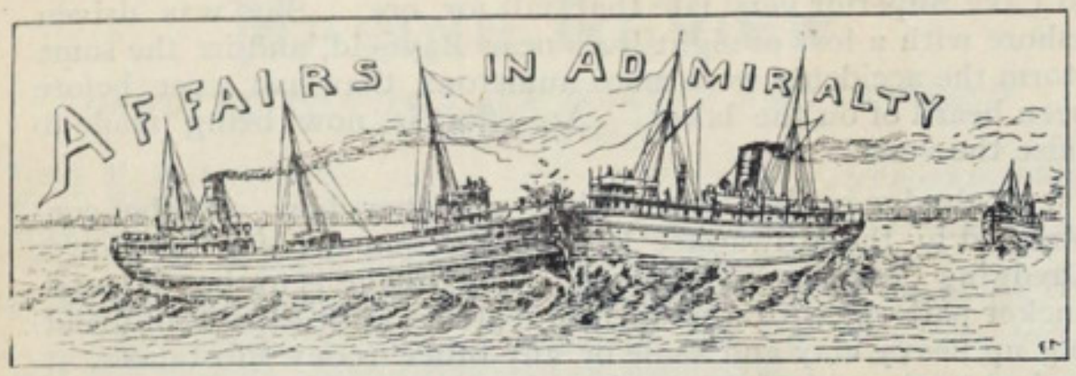
Fairplay of London, comments on a side-launch that took place recently on the Wear at the yards of Robert Thompson & Sons, Sunderland. The company only builds at this yard when crowded and this was the third side-launch there in seven years, the first attracting great attention. It might be more astonishing to Fairplay and its English readers to know that only a small portion of the vessels registered at 1,154,870 tons on the lakes were launched endwise. Only in the case of the wooden boats built by the Detroit Dry Dock Company are endwise launches common on the lakes. Some of the lake steamers of 2,000 to 3,000 tons capacity are launched into slips between 70 and 100 feet in width.

Steamship Fare.

The supplies taken aboard the vessels of the big steamship companies during a season of ordinary travel equal, probably, if they do not exceed, the rations used by a considerable army in a campaign of equal duration. The record of the Cunard fleet for one year, for instance, contains these items: 4,656 sheep, 1,800 lambs and 2,474 oxen, which is equivalent to 2,091,754 pounds of fresh meat. That would allow for a consumption of four pounds a minute. In addition are 53 tons of ham, 20 tons of bacon, 24,075 fowls, 4,230 ducks, 2,200 turkeys and 2,200 geese. Other items are: 831,603 eggs, 21,000 pounds of tea, 71,770 pounds of coffee, 296,100 pounds of sugar, 1½ tons of mustard, 1¾ tons of pepper, 7,216 bottles of pickles, 8,000 tins of sardines, 30 tons of salt cod and ling, 4,192 four-pound jars of jam, 15 tons of marmalade, 22 tons of raisins, currents and figs, 18 tons of split peas, 15 tons of pearl barley, 17 tons of rice, 34 tons of oatmeal, 460 tons of flour, 23 tons of biscuit, 33 tons of salt, 48,902 loaves of bread of 8 pounds each, 15 tons of cheese and 930 tons of potatoes. During the same period the following quantities of liquors, wines, and so forth were used: 8,030 quarts and 17,613 pints of champagne, 13,941 quarts and 7,310 pints of claret, 9,200 quarts of other wines, 489,344 pints of ale and porter, 174,921 quarts of mineral waters and 34,400 quarts of spirituous liquors. The passengers also purchased 34,360 pounds of tobacco, 63,340 cigars and 56,875 cigarettes.—Marine Journal.

Peculiarities of River Steamers.

Boilers of Mississippi river steamers are of the horizontal cylindrical return flue type, small in diameter and very long, having a few large flues. They are connected by a steam drum, and one or two mud drums extend across the battery. This class of boilers evaporate as much as eight pounds of water to the square foot, and are sometimes subjected to 200 pounds pressure. The engines are high pressure, horizontal, single cylinder, non-condensing, having long stroke and running at piston speeds of 200 to 250 feet per minute. The cut-off ranges from one-half to three-quarters, and the valves are of the poppet type. Following are particulars of a typical river steamer: City of New Orleans, side wheel, plying between St. Louis and New Orleans.—Tonnage, 1,526.28; length, 290 feet; width, 48 feet; depth, 8.5 feet; five boilers, each 44 inches diameter, 30 feet long; two 11-inch and two 14-inch flues; pressure allowed, 159 pounds; engines, 26⅜ inches diameter and 10 foot stroke.—Age of Steel.



A schooner westward bound in Long Island sound ported and went to the northward for the purpose of coming to anchor. A steamer was coming up astern and overtaking the schooner. The latter at the time she ported was 400 or 500 yards distant from the steamer, nearly ahead, and not over one and one-half points on the latter's port bow. Not recognizing the intention of the schooner to anchor, the steamer also ported and the vessels came into collision within the anchorage ground and outside the steamer's ordinary course. Judge Brown of the United States district court, New York city, held that the porting of the schooner presented no difficulty to the steamer, had she been properly observed and timely measures taken to go astern and that the steamer was solely in fault.

A New York harbor tug worth $15,000 was a short time ago awarded salvage to the amount of $750, for picking up five scows worth $30,000 which had negligently got adrift in Harlem river. The court held that when a vessel has gone adrift through negligence and is drifting toward other vessels, which she is likely to injure, the saving of her owners from liability to pay any such damage as was likely to arise, and which the owners would be called on to pay, should be taken into account in determining the amount of salvage award.

Where repairs are ordered by a shipmaster, who is also one of three equal part owners of a vessel, without the knowledge of the other owners, the master is liable for the whole debt and the other two owners are each liable for one-third of it, under the act of June 26, 1884, section 18.

In a case heard in the United States district court, New York city, Judge Brown found occasion to hold that towage services are presumptively a lien on the vessel and in case of a dispute it devolves upon the owner of the vessel to show circumstances that would render negative a claim upon the vessel.

A maritime lien for damages arising from collision takes precedence of the lien for seamen's wages accruing prior to the collision.

Wrecks and Heavy Losses.

Another Lake Michigan steamer, the A. E. Wilds, can be placed among the total losses of the present season. She was sunk, Sunday night, seventeen miles off Milwaukee in collision with the steamer Douglass of the McElroy Transportation Company, Milwaukee. The Wilds was owned by her commander, Capt. B. Wilds of Chicago. She rated A1½, registered 236 tons and had a Lloyds valuation of $23,000.

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The statement that the Canadian government had reduced the dry dock rates was premature. Such an announcement has not been made officially.

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UNITED STATES ENGINEER OFFICE, 34 West Congress street, Detroit, Mich., June 2, 1892. Sealed proposals in triplicate, for furnishing all plant materials and labor, and excavating in St. Mary's Falls Canal, Michigan, will be received at this office until 2 o'clock, p. m., July 2, 1892, and then publicly opened. Preference will be given to plant and materials of domestic production or manufacture, conditions of quality and price (import duties included) being equal. Attention is invited to acts of Congress, approved Feb. 26, 1885, and Feb. 23, 1887, vol. 23, page 332, and vol. 24, page 414, statutes at large. The government reserves the right to reject any or all proposals, or to waive any informalities in the bids received; also, to award the contract upon other considerations than the price. For further information apply at this office, or at the United States Engineer Office, Sault Ste. Marie, Mich. O. M. POE, Colonel, Corps of Engineers, Bvt. Brig. Gen., U. S. A.

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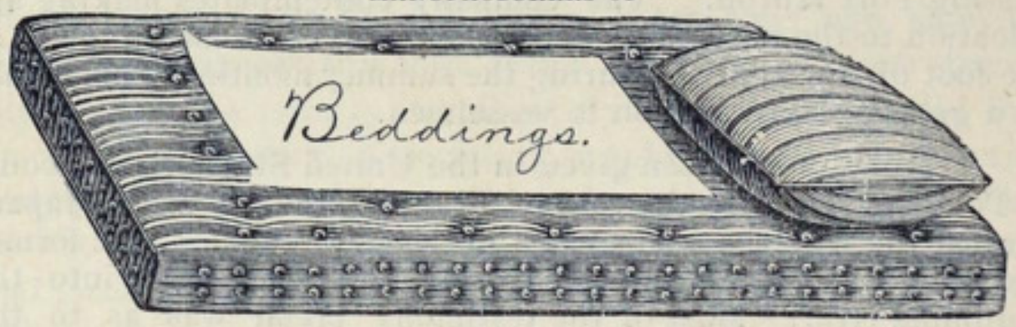

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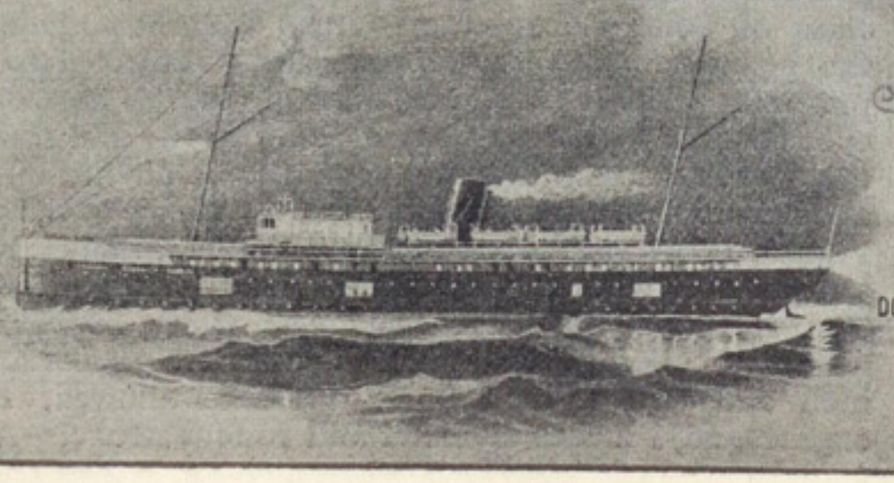
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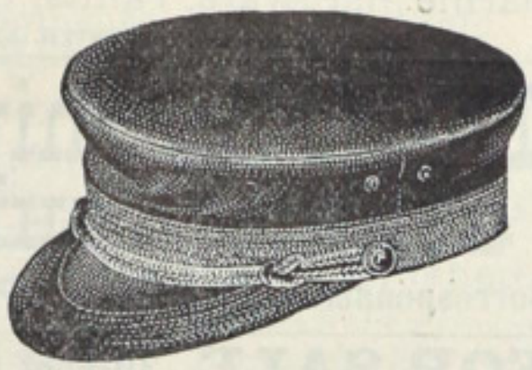

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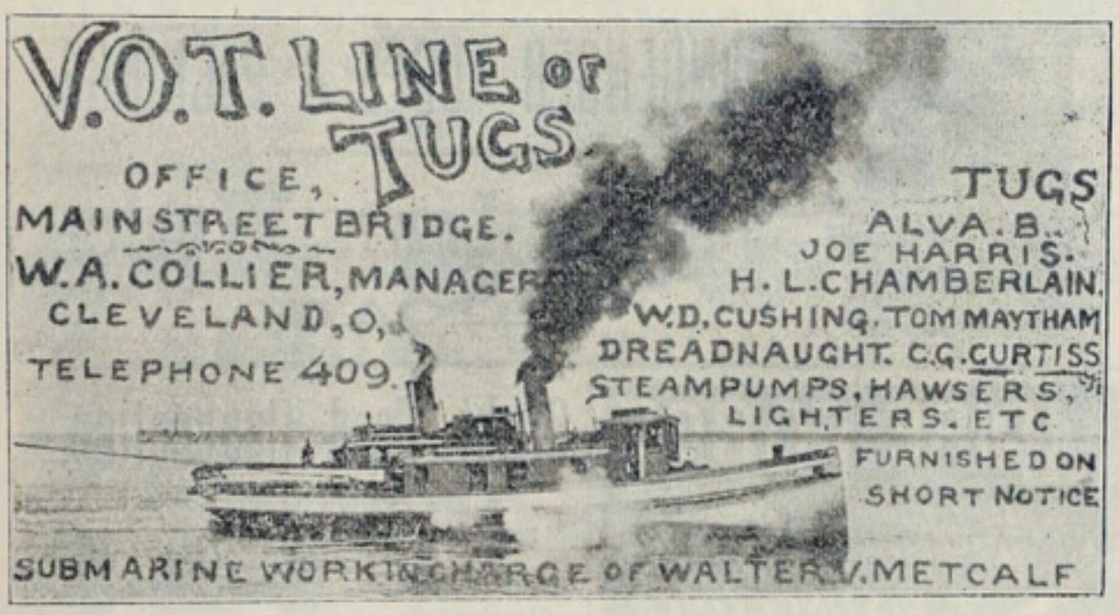

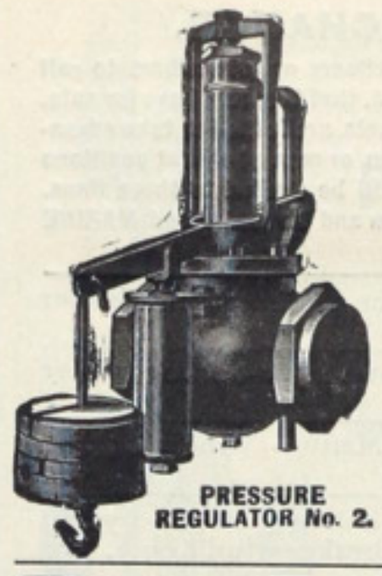

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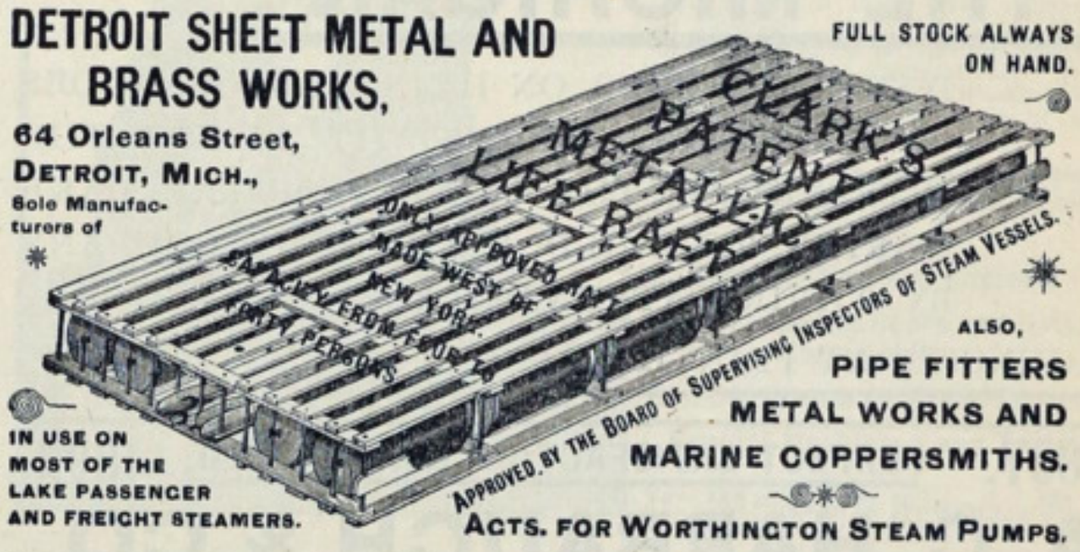
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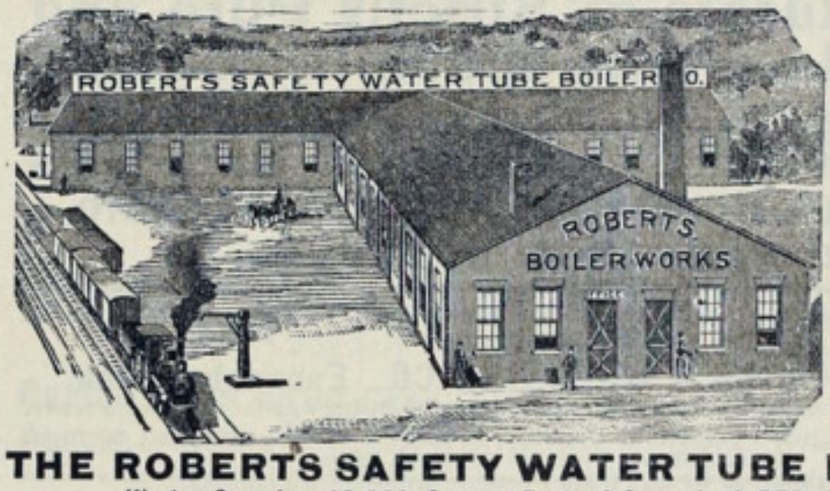

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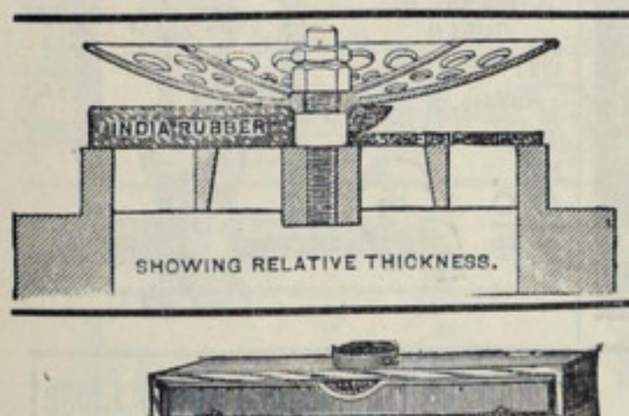

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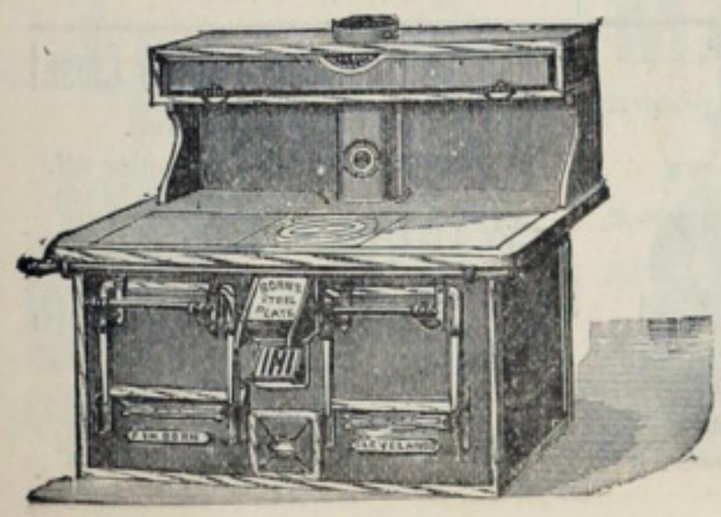

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Space under this heading may be used gratis by our advertisers or subscribers to call attention to vessels or any craft, machinery, new or second hand, that they may have for sale. Those wanting machinery of any kind, or wishing to purchase vessels, are invited to take advantage of the same offer. Employers in need of professional men or men who want positions may avail themselves of the opportunities offered. Each item will be limited to three lines. Letters concerning same must mention number attached to item and be addressed MARINE REVIEW, 516 Perry-Payne Building, Cleveland, O.

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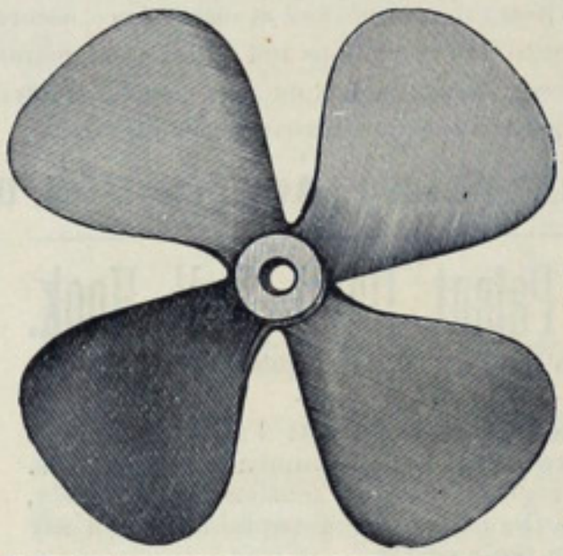

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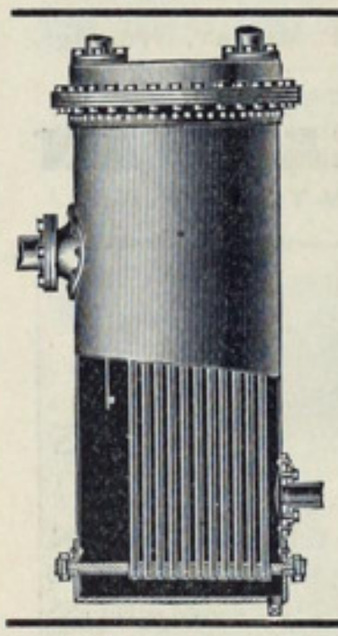

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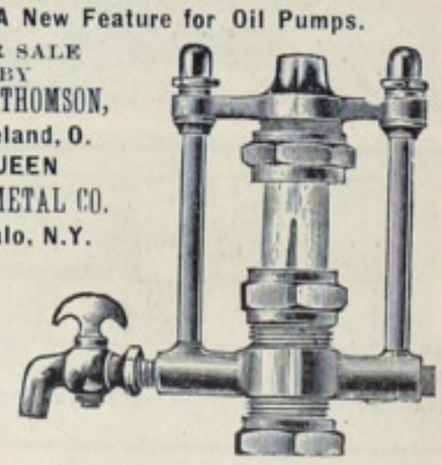

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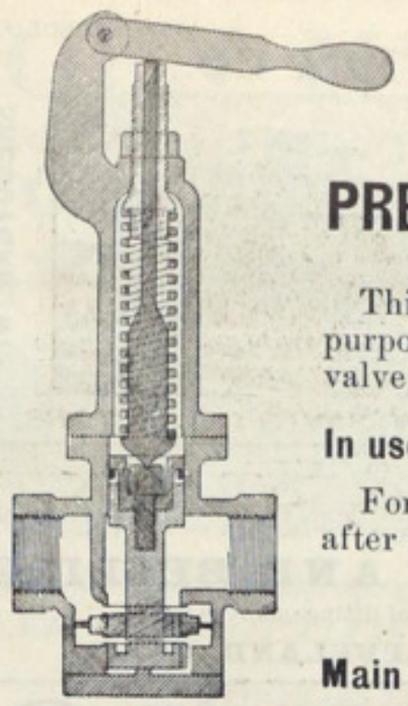

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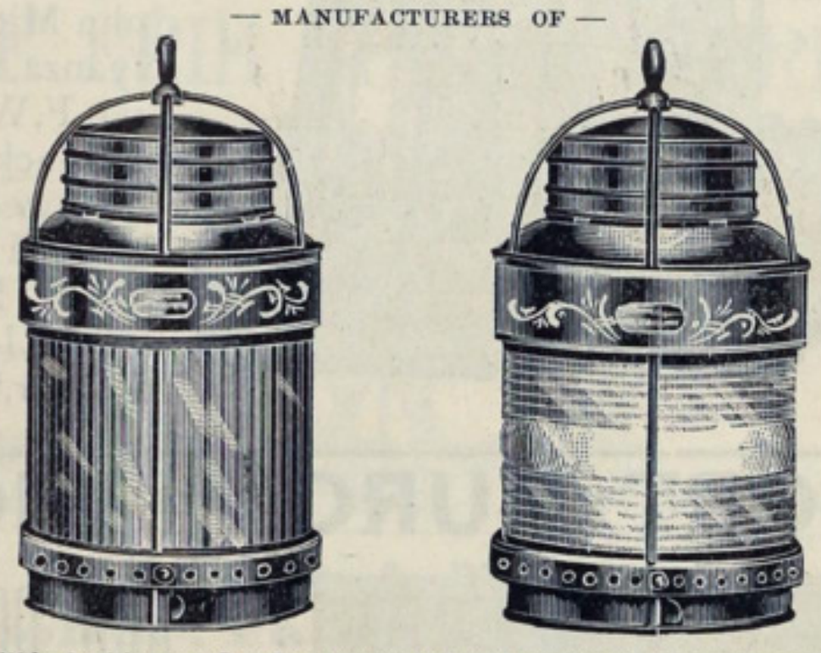

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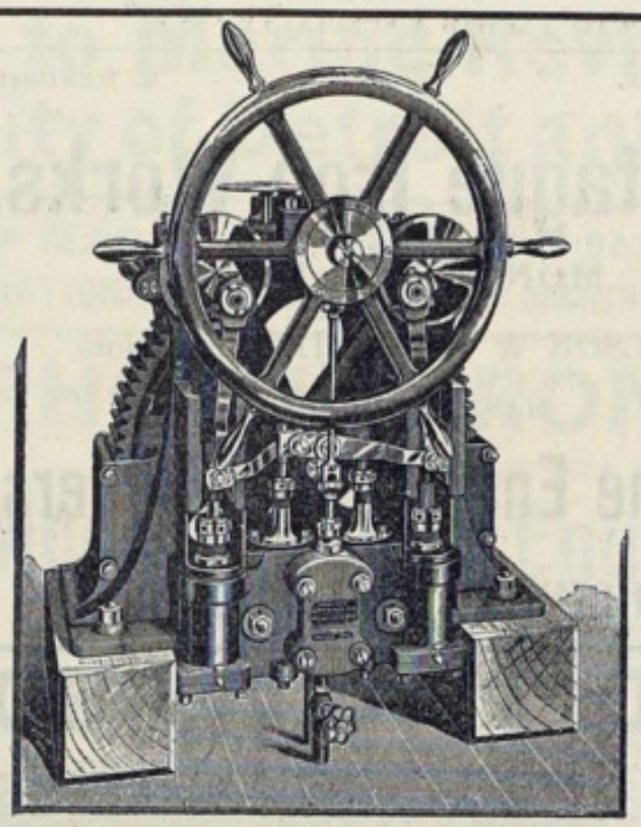

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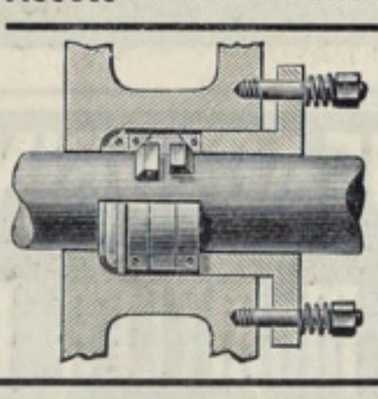

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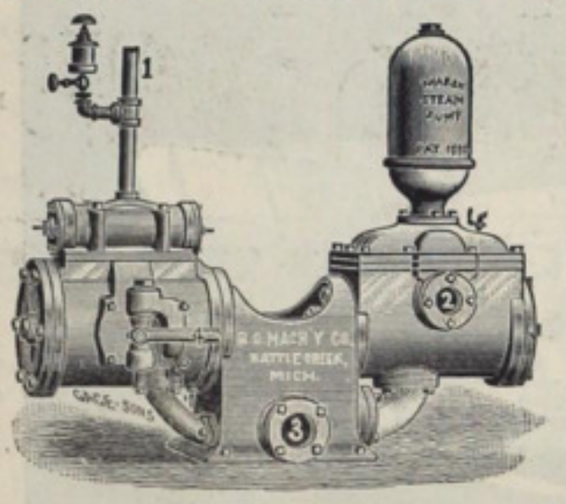

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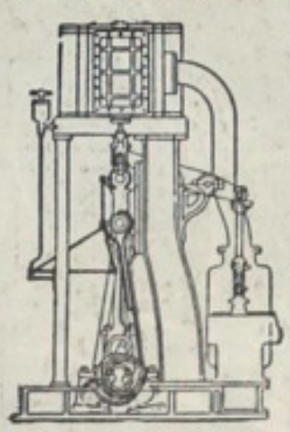

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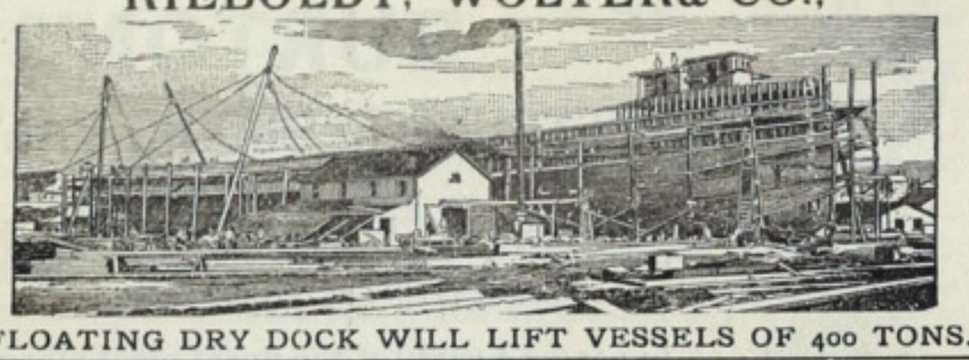

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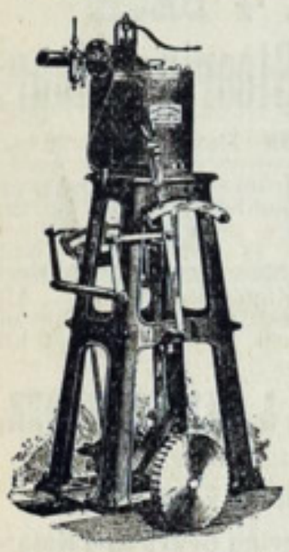

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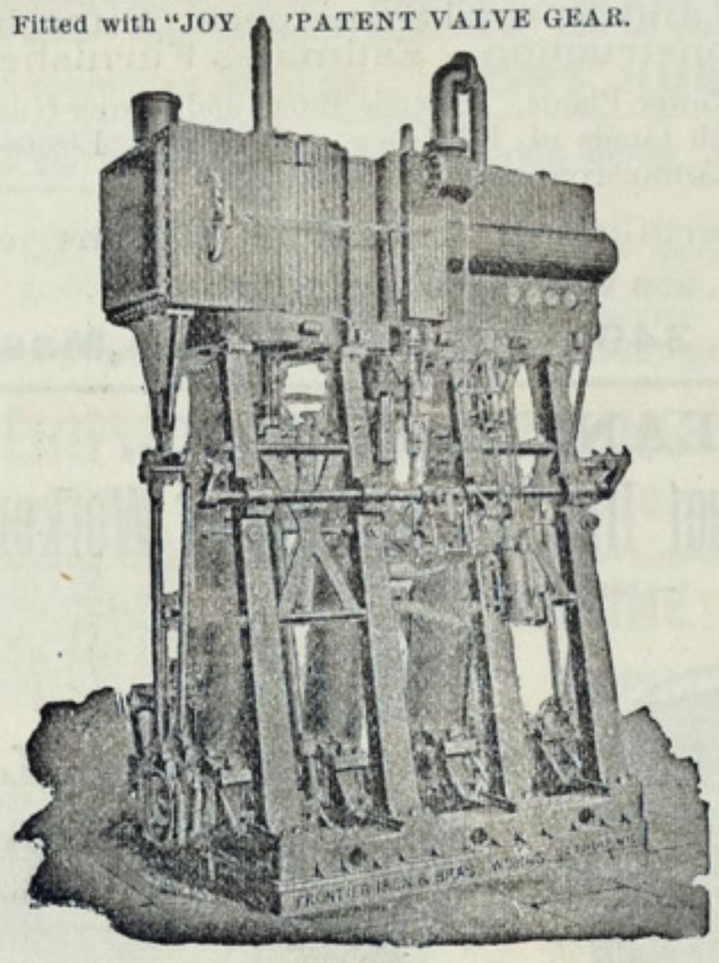

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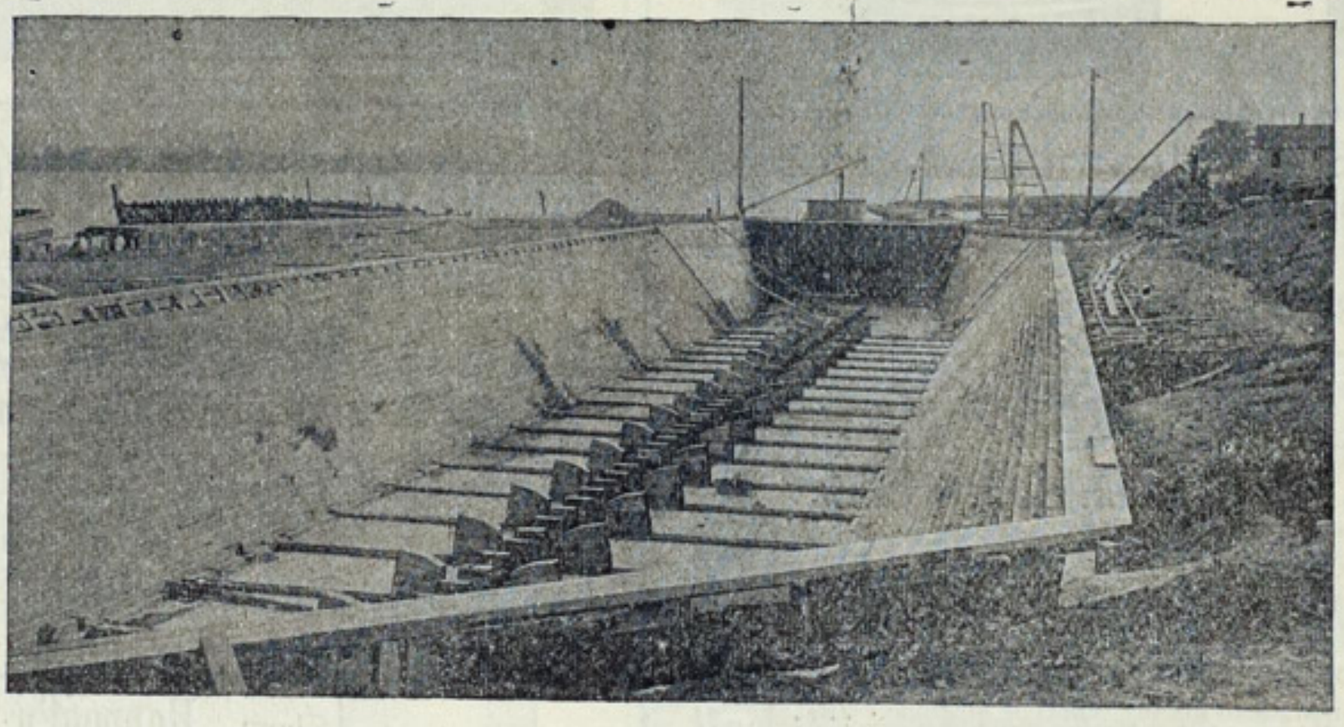

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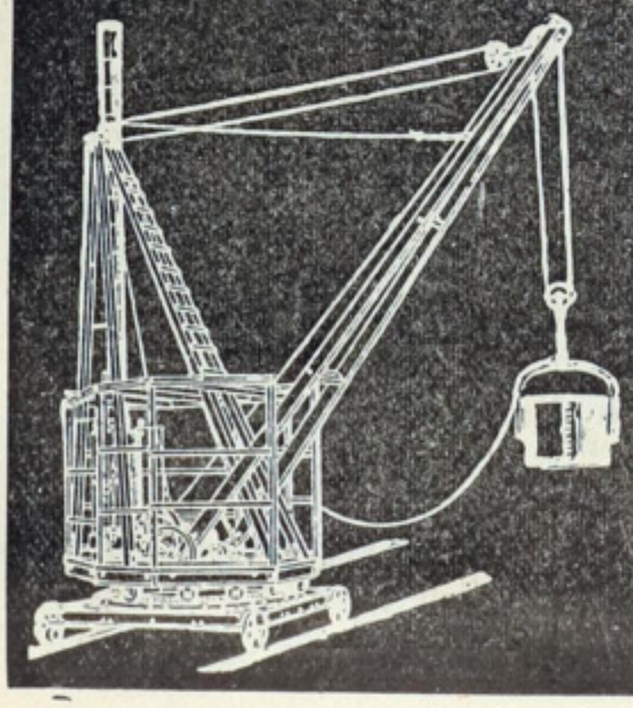

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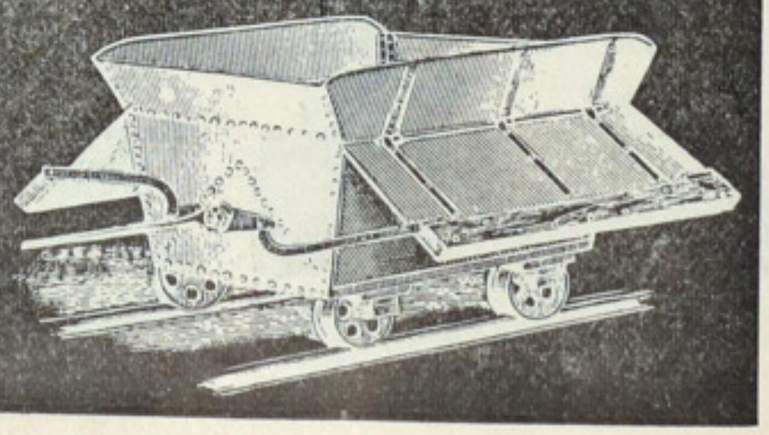

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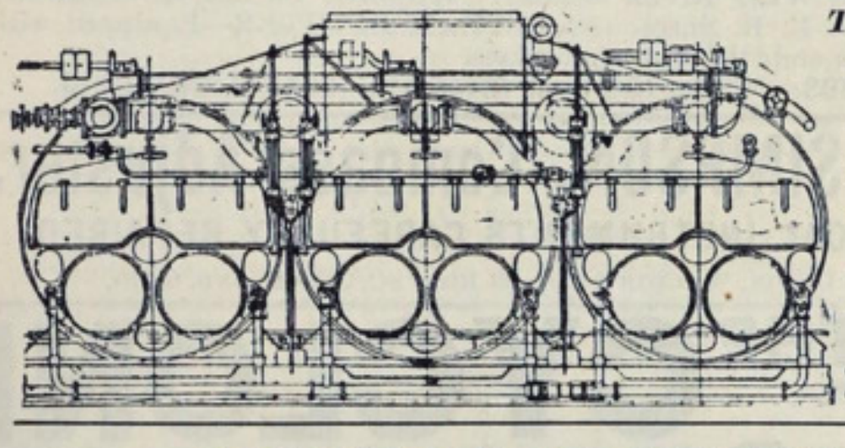

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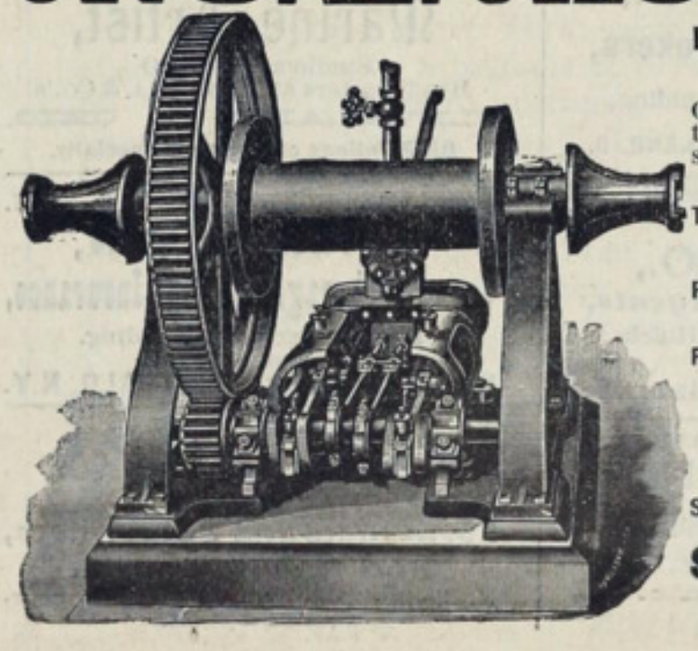

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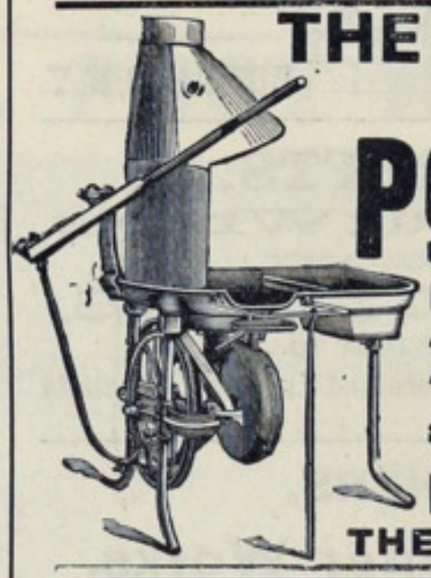

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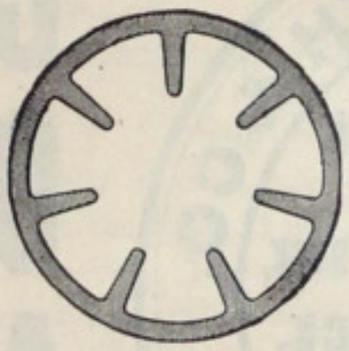

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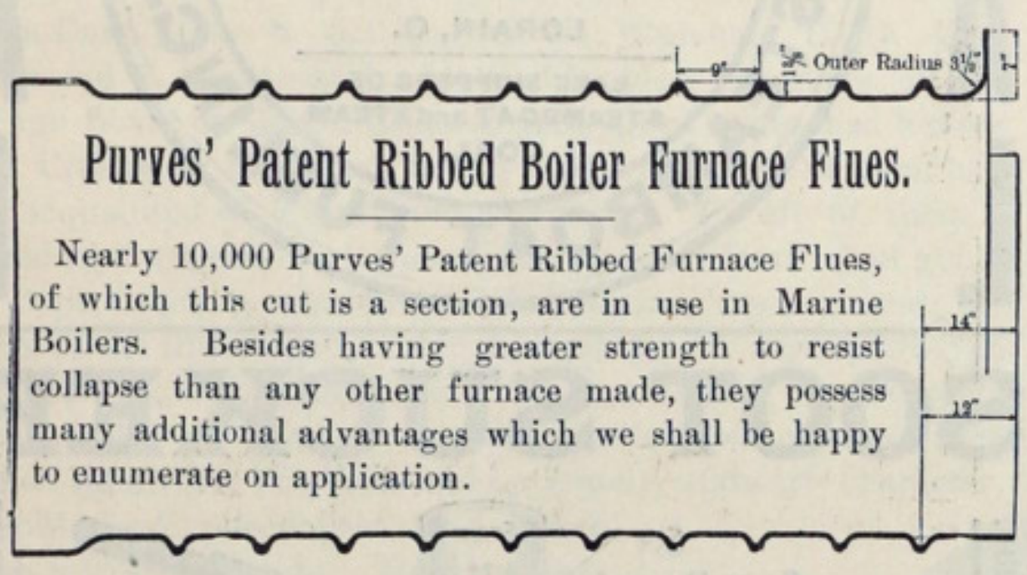

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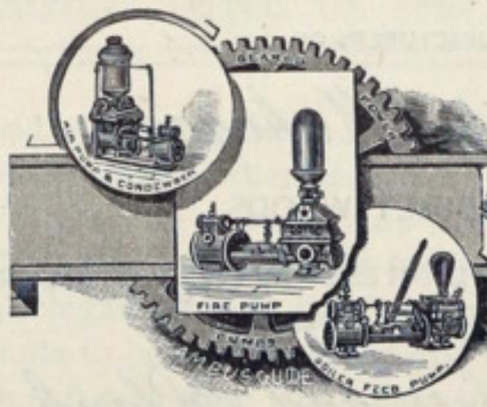

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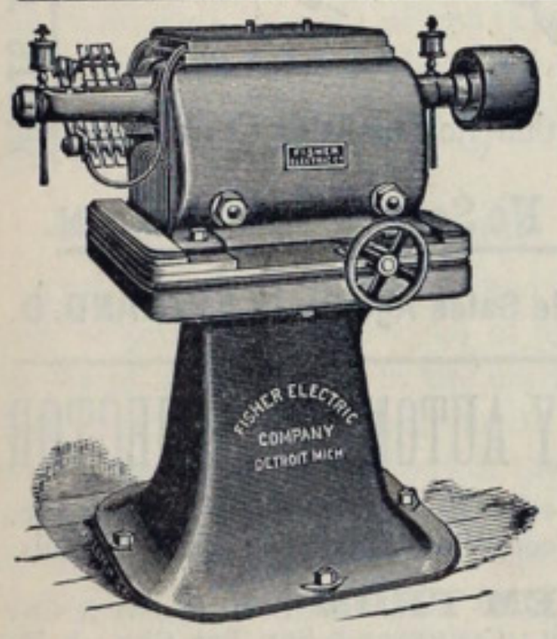

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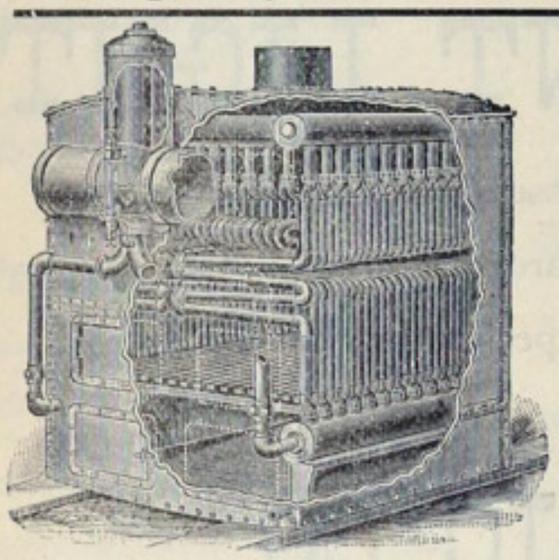

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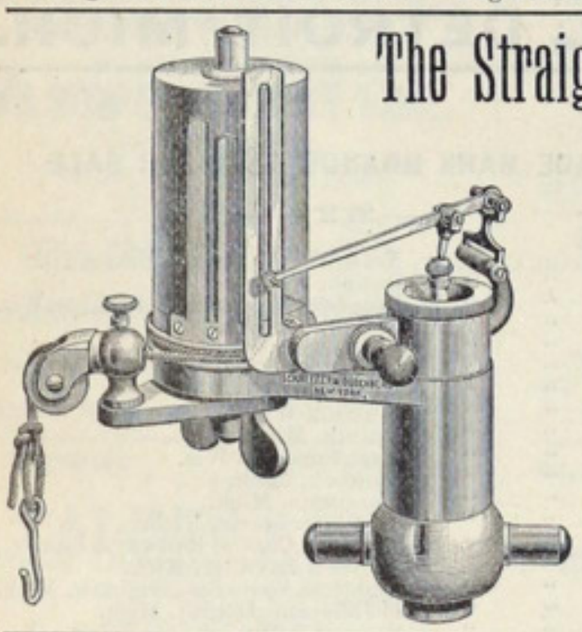

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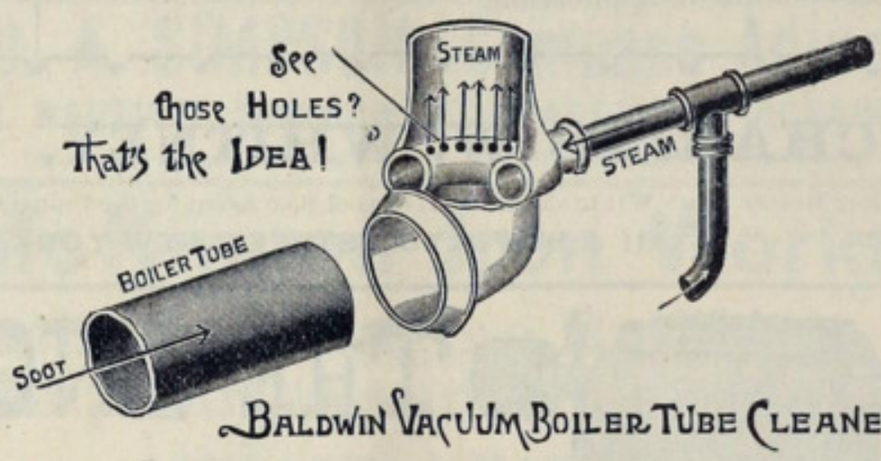

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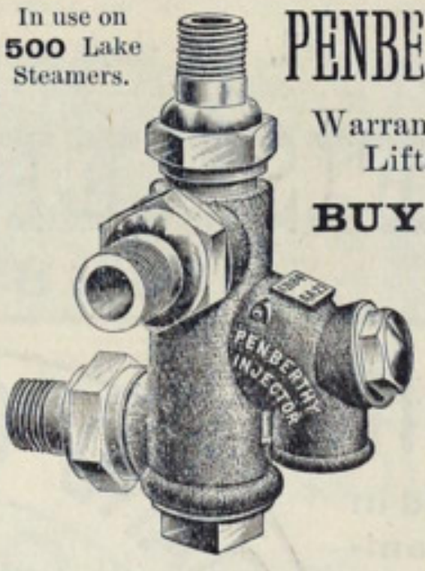

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